Unity Pro 2.2
OSLoader
User manual

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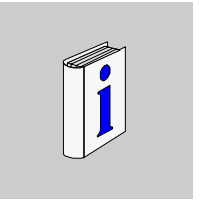
About the Book



At a Glance

Document Scope

This documentation presents OSLoader software and describes the communication principle behind PLCs.

This document is valid for Unity Pro Version 2.2.

Validity Note

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For reasons of safety and to ensure compliance with documented system data, only the manufacturer should perform repairs to components.

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Failure to observe this product related warning can result in injury or equipment damage.

User Comments

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Presentation of OSLoader software

1

At a Glance

Aim of this section

This section introduces the OSLoader software and describes its installation procedure.

What's in this Chapter?

This chapter contains the following topics:

Topic	Page
OSLoader : General	8
Installation of the OSLoader	8
Security management	9

OSLoader: General

At a Glance

The OSLoader software included in the Unity Pro offer allows the following:

- to update certain operating systems of Premium/Quantum processors and/or remote or in-rack input/output processors,
- downgrade Premium/Quantum processors so that they are compatible with the programming software PL7 V4 and Concept V2.5.

You can use the OSLoader software from its user interface.

Note: The OSLoader software is included in the Unity Pro offer and can be installed by means of a separate procedure or at the same time as installing Unity Pro.

Note: The OSLoader software is compatible with the operating systems that can be used by Unity Pro, in particular:

- Windows 2000,
- Windows XP.

Installation of the OSLoader

Introduction

The OSLoader software must be installed at the same time as the Unity Pro software. It is not possible to install OSLoader separately.

Security management

Introduction

The OSLoader software influences the behavior of the PLC. While the processor is being updated the controller is stopped.

For this reason, when starting the OSLoader, authentication of access rights is required in order to authorize its execution.

Security

The OSLoader's security management tool is the same one used by Unity Pro.

Two different profiles are offered :

- **Read-only**: No transfer is authorized.
- **All rights**: All functions of the OSLoader software are available.

Note: You can add other profiles to the two offered by default.

Communication principles

2

At a Glance

Aim of this section

This section describes the communication links of the OSLoader software.

What's in this Chapter?

This chapter contains the following topics:

Topic	Page
Communication types used	12
Device types	13

Communication types used

Types of Communication

The communication types used by the OSLoader software are as follows:

- Modbus Plus,
- Modbus,
- Uni-Telway,
- FTP.

Choice of link

When starting up OSLoader, following the welcome window, a dialog box appears on screen allowing you to choose the communication type:

- Modbus Plus (See *Description of the target device selection screen: Modbus Plus communication type, p. 29*)
- Modbus (See *Description of the target device selection screen: Modbus communication type, p. 34*)
- Uni-Telway (See *Description of the target device selection screen: Uni-Telway communication type, p. 39*)
- FTP (See *Description of the target device selection screen: FTP communication type, p. 43*)

Device types

Introduction

The target devices of the OSLoader software are as follows :

- the processors,
- the devices directly connected to the communication link but which have no application program,
- the in-rack modules,
- the remote modules.

Processors and other devices

For all devices directly connected to the OSLoader's communication link (processors etc.), standard addressing provides the connection.

The OSLoader software can execute the processor's run (**RUN**) and stop (**STOP**) commands for the devices (processors etc.).

In-rack modules

The OSLoader communicates with the in-rack modules through the processor.

The messages are sent to the processor with an address indicating the position of the target module in the rack.

Remote modules

The OSLoader communicates with the remote modules through the processor and an input/output module.

The messages are sent with an address made up of two different parts :

- the first part indicates to the processor the position of the input/output module,
- the second part indicates to the input/output module the address of the target remote module on the input/output bus.

Compatibility between programming software and processors

3

At a Glance

Aim of this section

This section contains tables showing compatibility between Schneider Electric programming software (PL7, Concept and Unity Pro) and Schneider Electric processors.

What's in this Chapter?

This chapter contains the following topics:

Topic	Page
Compatibility between software (PL7 and Unity Pro) and processors (Premium and Atrium range)	16
Compatibility between software (Concept and Unity Pro) and processors (Quantum Range)	17

Compatibility between software (PL7 and Unity Pro) and processors (Premium and Atrium range)

Introduction

OSLoader allows the operating systems of certain processors modules to be updated. The list of processors compatible with this update is indicated in the following tables.

Premium processors' compatibility

The following table shows the compatibility between software (PL7 and Unity Pro) and the processors of the Premium range.

Processors	**PL7 V3**	**PL7 V4**	**Unity Pro V2**
TSX 57 ••2	x	x	-
TSX 57 ••3	-	x	x (1)
TSX 57 ••4	-	-	x
Legend:			
x	Compatible processors.		
-	Non-compatible processors		
(1)	After updates by the OSLoader to the processor's operating system.		

Atrium processors' compatibility

The following table shows the compatibility between software (PL7 and Unity Pro) and the processors of the Atrium range.

Processors	**PL7 V3**	**PL7 V4**	**Unity Pro V2**
TSX PCI 57 ••4	-	-	x
Legend:			
x	Compatible processors.		
-	Non-compatible processors		

Compatibility between software (Concept and Unity Pro) and processors (Quantum Range)

Introduction

OSLoader allows the operating systems of certain processor modules to be updated. The list of processors compatible with this update is indicated in the following table.

Premium Quantum processor compatibility

The following table shows the compatibility between software (Concept and Unity Pro) and the processors of the Quantum range.

Processors	**Concept V2.5**	**Unity Pro V2**
140 CPU ••3 0• S/X	x	-
140 CPU 424 0x /X	x	x (1)
140 CPU •34 1•	x	x (1)
140 CPU 65 1• 0	-	x
140 CPU 67 16 0	-	x
Legend:		
x	Compatible processors.	
-	Non-compatible processors.	
(1)	After updates by the OSLoader to the processor's operating system.	

Upgrade of NOE modules

OSLoader does not permit an upgrade of a "Concept Level" NOE (< 3.1) or ENT on the "Unity Level". For NOE (< 3.1), you must first upgrade your module to 3.1. You can do this (just like in the past) with the Concept**EXECLoader** . Then use the OSLoader to create a "Unity V2" compatible NOE (3.5).

WARNING

DESTRUCTION OF THE DEVICE

Do not begin to download until you have very carefully read the upgrade instructions you received with your OS Upgrade package.
Incorrect execution of these instructions may result in the module becoming non-functional.

Failure to follow this instruction can result in death, serious injury, or equipment damage.

Step	Action
1	Click on the EXECLoader symbol in the NOE subdirectory "v2.xx to v3.xx Upgrade Instructions".
2	Lick on **Next** to access the protocol selection screen.
3	Select **TCP/IP Protocol**.
4	Enter the TCP/IP address of the NOE and select **Direct Device**.
5	Enter the OS file to be loaded.
6	Start the download.

How to use the OSLoader

4

At a Glance

Aim of this section

This section describes the procedure for using the OSLoader software.

What's in this Chapter?

This chapter contains the following sections:

Section	Topic	Page
4.1	Usage principle	21
4.2	OSLoader start procedure	22
4.3	How to choose the target device	28
4.4	Available operations	49
4.5	Transfer of the OS	56

4.1 Usage principle

Using the OSLoader

General

The procedures described in the following pages are valid if:

- you want to update the operating systems for the **Premium** and **Quantum** controllers for the following components :
  - Processors
  - Networking

This OS CD-ROM contains all the data required for updating the processors and networking modules.

The **readme.txt** file on the OS-CD-ROM describes the files and how they access the CD-ROM dependent of the desired update or equipment.

Special cases

This procedure must be carried out twice if you:

- want to upgrade a Premium processor (PL7 to Unity)
- want to downgrade a Premium processor (Unity to PL7)
- want to upgrade a Quantum processor (Concept to Unity)
- want to downgrade a Quantum processor (Unity to Concept IEC/LL984)
- want to migrate from one Unity OS that is not compatible with the next one e.g. TSX 254 Unity V1.0 to TSX 254 Unity V2.0).

The **readme.txt** file on the OS CD-ROM contains information on the number of procedures to be carried out dependent of the equipment.

4.2 OSLoader start procedure

At a Glance

Aim of this sub-section

This sub-section describes the basic operations for accessing the OSLoader software.

What's in this Section?

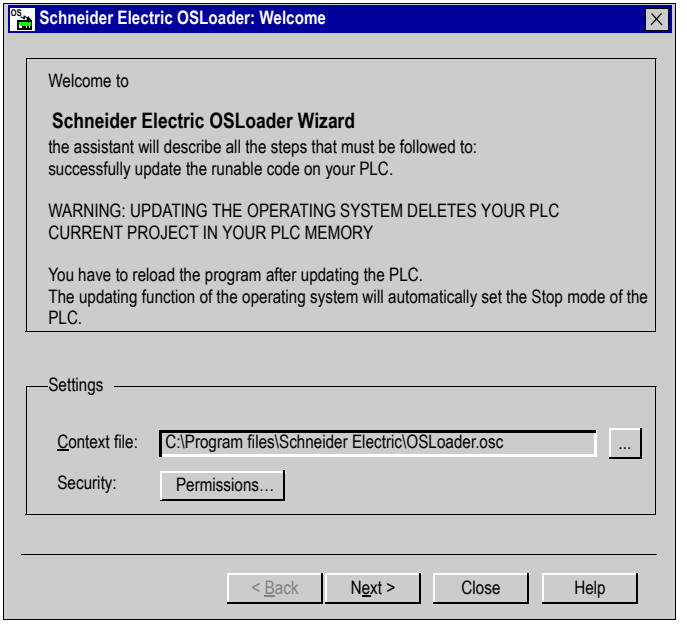
This section contains the following topics:

Topic	Page
How to access the OSLoader software	23
Description of the welcome screen	24
Description of the communication type selection screen	26
How to choose the communication type	27

How to access the OSLoader software

Procedure

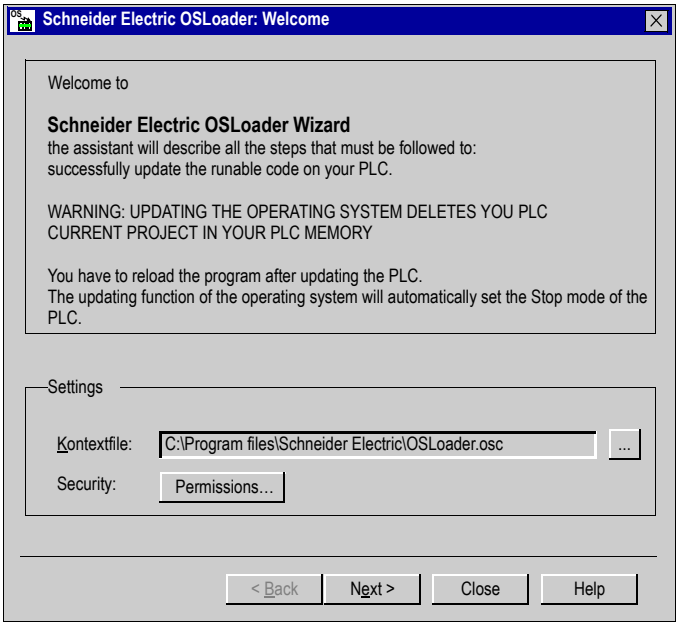
The following table describes the procedure for starting the OSLoader software.

Step	Action
1	From the **Schneider Electric** group, double-click on the icon corresponding to the OSLoader. **Result**: The software is launched, the **Welcome** window appears on screen (See *Description of the welcome screen, p. 24*). 

Description of the welcome screen

Illustration

The following sections describe the most important elements of the **Welcome Window** that appears at startup of OSLoader.


Schneider Electric OSLoader: Welcome
Welcome to
Schneider Electric OSLoader Wizard
the assistant will describe all the steps that must be followed to:
successfully update the runable code on your PLC.
WARNING: UPDATING THE OPERATING SYSTEM DELETES YOU PLC CURRENT PROJECT IN YOUR PLC MEMORY
You have to reload the program after updating the PLC.
The updating function of the operating system will automatically set the Stop mode of the PLC.
Settings
Kontextfile:
C:\Program files\Schneider Electric\OSLoader.osc
...
Security:
Permissions...
< Back
Next >
Close
Help

Context file

This field allows you to choose the context file. The last communication type, the devices detected and their addresses and selected are saved in the context file. When the OSLoader is opened again, details are available immediately.

In the input field the last context file used is shown.

The **...**(Find) button allows you to choose the context file (or its path) in which the OSLoader will operate.

Security

The **Permissions** button allows you to view the rights associated with the current user profile. If this button is activated when the security function is turned off, a window displaying a message will appear that the security function is turned off and no data is available.

Navigation buttons

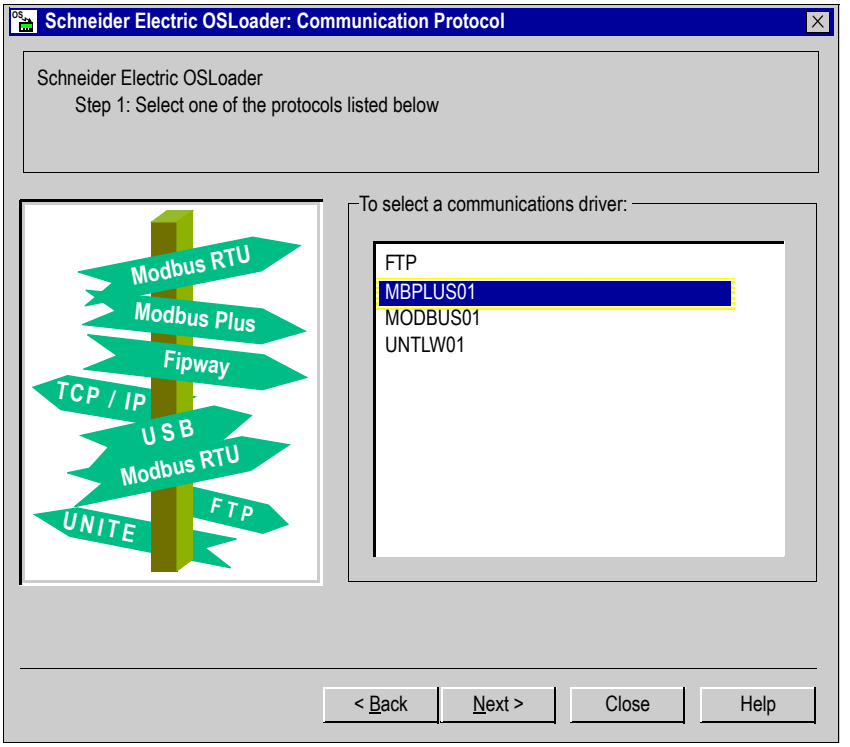
The navigation buttons, situated at the bottom of the screen, allow you:

- to proceed to the next step (**Next**),
- to close the software (**Close**),
- to access the on-line help (**Help**).

Description of the communication type selection screen

Illustration

The main elements of the communication type selection screen are described in the following paragraphs.



Communication Protocol

The **Choosing a communication Driver** field allows you to choose a communication type (See *How to choose the communication type, p. 27*) from amongst the drivers available (previously installed by NetAccess on your computer and totally independent from the OSLoader software).

Navigation buttons

The navigation buttons, situated at the bottom of the screen, allow you:

- to return to the previous step (**Back**),
- to proceed to the next step (**Next**),
- to close the software (**Close**),
- to access the on-line help (**Help**).

How to choose the communication type

Procedure

The following table describes the procedure for choosing the communication type.

Step	Action
1	In the **Choosing a communication driver** field select the driver to be used for communication between the PC and the PLC.
2	Confirm your choice by pressing the navigation button **Next**. **Result**: The target **dialog box** allows you to choose the target device independently of the communication type (See *How to choose the target device, p. 28*).

4.3 How to choose the target device

At a Glance

Aim of this sub-section

This sub-section describes the procedure for selecting the target device according to the communication type chosen.

What's in this Section?

This section contains the following topics:

Topic	Page
Description of the target device selection screen: Modbus Plus communication type	29
Description of the target device selection screen: Modbus communication type	34
Description of the target device selection screen: Uni-Telway communication type	39
Description of the target device selection screen: FTP communication type	43
How to choose the target device	48

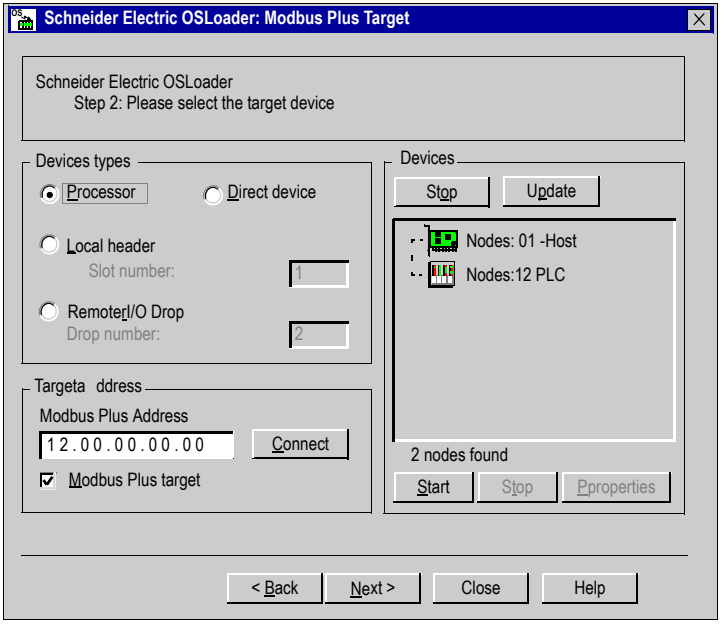
Description of the target device selection screen: Modbus Plus communication type

General

The **Modbus Plus Target** dialog box allows you to choose the target device according to the Modbus Plus communication type.

Illustration

The main elements of the target device selection screen are described in the following paragraphs.



Device type

The device types supported by OSLoader (See *Device types, p. 13*) and available for the Modbus Plus communication type are displayed in the **Device Type** field. You must check the box corresponding to the device you want.

The **Slot number** and **Drop number** boxes may be enabled or disabled according to the device type selected.

The following table shows the four possible cases.

Device type selected	Slot number	Drop number
Cam processor	Disabled	Disabled
Local header	Enabled	Disabled
Remote I/O Drop	Enabled	Enabled
Direct device	Disabled	Disabled

Target address

The **Target Address** field is made up of three main parts.

The following table describes the functionalities of each of these parts.

Fields	Description
Modbus Plus Address	In this field, you must enter the address of the target device specific to the Modbus Plus communication type.
Modbus Plus Target	This check box allows you to specify that the target device must be accessed through its Modbus Plus connection.
Connect	By pressing the **Connect** button, the OSLoader software connects to the target device whose address is specified in the **Modbus Address Plus** entry field. If the connection is established, the target device is added to the directory tree in the **Devices** field.

Note: If a **bridge** is selected as the device, the **Modbus Plus destination checkbox**must be deactived.

Devices: directory tree

The directory tree in the **Devices** field displays the list of connected devices. On opening the OSLoader, when no connection is enabled, the directory tree is empty.

The following table shows the list of icons used in the directory tree together with the corresponding description.

Icon	Description
	Processor in stop mode (**Stop**).
	Processor in run mode (**Run**).
	Processor is not configured. No application was ever loaded into the PLC.
	Host adapter (SA85 or PCMCIA Modbus Plus card).
	Bridge or Bridge plus or Bridge mux.
	Input/output port.
	Remote input/output module.
??	Device unknown.

By clicking on a specific device, the **Modbus Plus address** entry field of the **Target Address** field is automatically updated.

By double-clicking on a specific device, you proceed to the **Device properties** dialog box (equivalent to the **Properties** button).

Devices: Scan and Update

By pressing on the **Scan** button, a sniffing program is launched on the network. When a device is detected, its name and address are added to the directory tree in the **Devices** field. If a bridge is detected, the devices connected to the bridge are added as sub-branches in the same directory tree.

The **Update** button updates the on/off status of the processors contained in the directory tree.

Devices: Start and stop

The **Start** and **Stop** buttons are only available if a processor in the directory tree of the **Devices** field is selected. In all other cases, they are disabled.

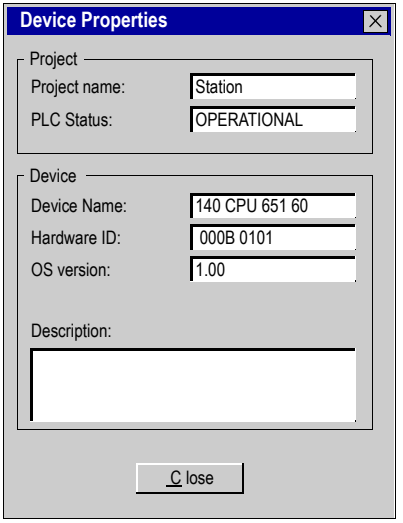
By pressing the **Stop** button, you can stop the processor.

By pressing the **Start** button, you can restart the processor.

Device Properties

The **Device Properties** dialog box, which is accessible by pressing the **Properties** button in the **Devices** field, gives access to information concerning the device selected.

Display of the **Device Properties** dialog box:



Elements of the **device properties dialog box**:

Element	Description
Project name	Name of the project loaded into the controller
PLC status	Status of the corresponding PLC (OPERATIONAL, STOPPED, INIT, NOT CONFIGURED, WAITING, PAUSED, ERROR)
Equipment Name	Device product name, e.g. 140 CPU 651 60
Hardware ID	32 bit number used to uniquely identify a device type in a specific OS, e.g. 000B 0101
OS version	Number used to uniquely identify the OS delivered, e.g. 1.00
Description	Device description e.g. Premium TSX P57 304 OS V1.0

The **Close** button allows you to return to the **Modbus Plus Target** screen.

Navigation buttons

The navigation buttons, situated at the bottom of the screen, allow you:

- to return to the previous step (**Back**),
- to proceed to the next step (**Next**),
- to close the software (**Close**),
- to access the on-line help (**Help**).

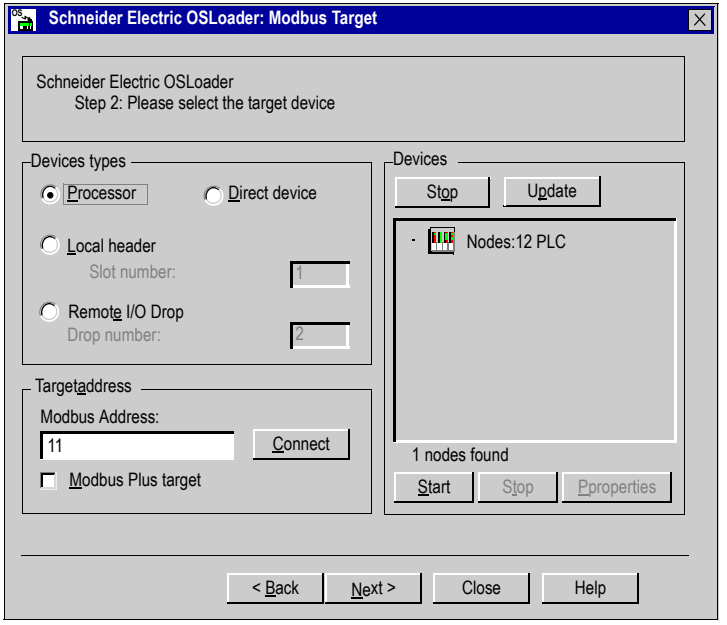
Description of the target device selection screen: Modbus communication type

General

The **Modbus Target** dialog box allows you to choose the target device according to the Modbus communication type.

Illustration

The main elements of the target device selection screen are described in the following paragraphs.



Device type

The device types supported by OSLoader (See *Device types, p. 13*) and available for the Modbus RTU communication type are displayed in the **Device Type** field. You must check the box corresponding to the device you want.

The **Slot number** and **Drop number** boxes may be enabled or disabled according to the device type selected.

The following table shows the four possible cases.

Device type selected	Slot number	Drop number
Cam processor	Disabled	Disabled
Local communication module	Enabled	Disabled
Remote I/O Drop	Enabled	Enabled
Direct device	Disabled	Disabled

Target address

The **Target Address** field is made up of three main parts.

The following table describes the functionalities of each of these parts.

Fields	Description
Modbus Address	In this field, you must enter the address of the target device specific to the Modbus communication type.
Modbus Plus Target	This check box allows you to specify that the target device must be accessed through its Modbus Plus connection.
Connect	By pressing the **Connect** button, the OSLoader software connects to the target device whose address is specified in the **Modbus Address** entry field. If the connection is established, the target device is added to the directory tree in the **Devices** field.

Note: If a **bridge** is selected as the device, the **Modbus Plus destination checkbox** must be deactived.

Devices: directory tree

The directory tree in the **Devices** field displays the list of connected devices. On opening the OSLoader, when no connection is enabled, the directory tree is empty.

The following table shows the list of icons used in the directory tree together with the corresponding description.

Icon	Description
	Processor in stop mode (**Stop**).
	Processor in run mode (**Run**).
	Processor is not configured. No application was ever loaded into the PLC.
	Host adapter (SA85 or PCMCIA Modbus Plus card).
	Bridge or Bridge plus or Bridge mux.
	Input/output port.
	Remote input/output module.
??	Device unknown.

By clicking on a specific device, the **Modbus Address** entry field of the **Target Address** field is automatically updated.

By double-clicking on a specific device, you proceed to the **Device properties** dialog box (equivalent to the **Properties** properties button).

Devices: Scan and Update

By pressing on the **Scan** button, a sniffing program is launched on the network. When a device is detected, its name and address are added to the directory tree in the **Devices** field. If a bridge is detected, the devices behind are added as sub-branches in the same directory tree.

The **Update** button updates the on/off status of the processors contained in the directory tree.

Devices: Start and stop

The **Start** and **Stop** buttons are only available if a processor in the directory tree of the **Devices** field is selected. In all other cases, they are disabled.

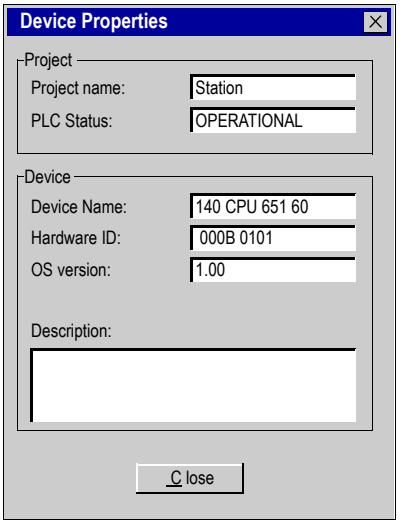
By pressing the **Stop** button, you can stop the processor.

By pressing the **Start** button, you can restart the processor.

Device Properties

The **Device Properties** dialog box, which is accessible by pressing the **Properties** button in the **Devices** field, gives access to information concerning the device selected.

Display of the **Device Properties** dialog box:



Elements of the **device properties dialog box**:

Element	Description
Project name	Name of the project loaded into the controller
PLC status	Status of the corresponding PLC (OPERATIONAL, STOPPED, INIT, NOT CONFIGURED, IDLE, PAUSED, ERROR)
Equipment Name	Device product name, e.g. 140 CPU 651 60
Hardware ID	32 bit number used to uniquely identify a device type in a specific OS, e.g. 0008 0101
OS version	Number used to uniquely identify the OS delivered, e.g. 1.00
Description	Device description e.g. Premium TSX P57 304 OS V1.0

The **Close** button allows you to return to the **Modbus Target** screen.

Navigation buttons

The navigation buttons, situated at the bottom of the screen, allow you:

- to return to the previous step (**Back**),
- to proceed to the next step (**Next**),
- to close the software (**Close**),
- to access the on-line help (**Help**).

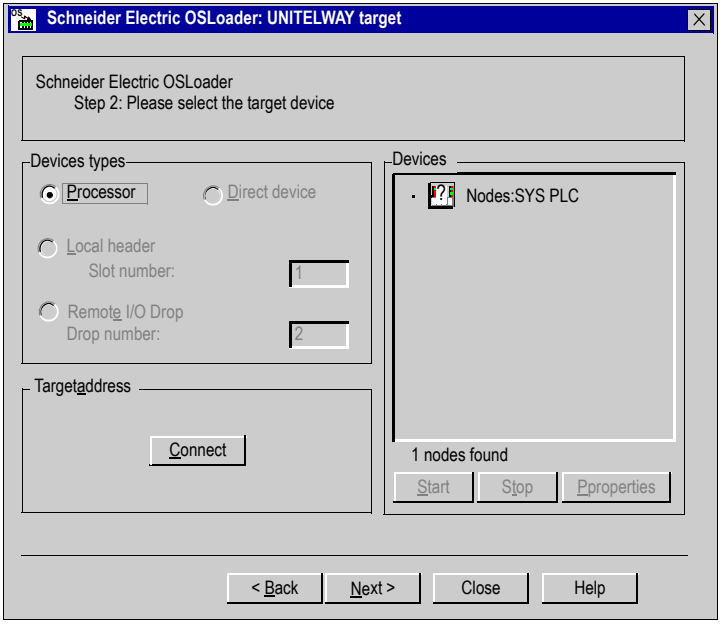
Description of the target device selection screen: Uni-Telway communication type

General

The **Uni-Telway Target** dialog box allows you to choose the target device according to the Uni-Telway communication type selected in the previous step.

Illustration

The main elements of the target device selection screen are described in the following paragraphs.



Device type

The device types supported by OSLoader (See *Device types, p. 13*) and available for the Uni-Telway communication type are displayed in the **Device Type** field. For Uni-Telway, only one processor can be the target.

Target address

The following table describes the functionalities of the **Target Address** field.

Fields	Description
Connect	By pressing the **Connect** button, the OSLoader software connects to the target device. If the connection is established, the target device is added to the directory tree in the **Devices** field. If the connection cannot be established, an error message explaining the reason for the failure is shown on screen.

Devices: directory tree

The directory tree in the **Devices** field displays the list of connected devices. On opening the OSLoader, when no connection is enabled, the directory tree is empty.

The following table shows the list of icons used in the directory tree together with the corresponding description.

Icon	Description
	Processor in stop mode (**Stop**).
	Processor in run mode (**Run**).
	Processor is not configured. No application was ever loaded into the PLC.
	Host adapter (SA85 or PCMCIA Modbus Plus card).
	Bridge or Bridge plus or Bridge mux.
	Input/output port.
	Remote input/output module.
??	Device unknown.

By double-clicking on a specific device, you proceed to the **Device properties** dialog box (equivalent to the **Properties** properties button).

Devices: Start and stop

The **Start** and **Stop** buttons are only available if a processor in the directory tree of the **Devices** field is selected. In all other cases, they are disabled.

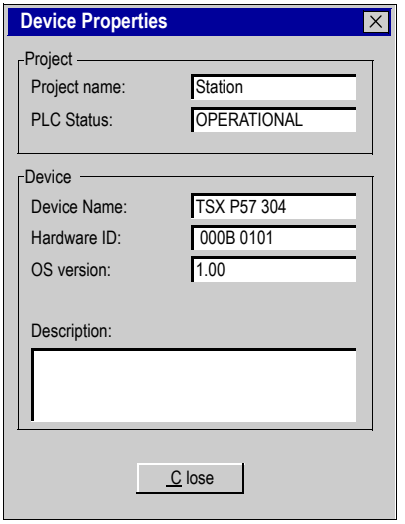
By pressing the **Stop** button, you can stop the processor.

By pressing the **Start** button, you can restart the processor.

Device Properties

The **Device Properties** dialog box, which is accessible by pressing the **Properties** button in the **Devices** field, gives access to information concerning the device selected.

Display of the **Device Properties** dialog box:



Elements of the **device properties dialog box**:

Element	Description
Project name	Name of the project loaded into the controller
PLC status	Status of the corresponding PLC (OPERATIONAL, STOPPED, INIT, NOT CONFIGURED, WAITING, PAUSED, ERROR)
Equipment Name	Device product name, e.g. TSX P57 304
Hardware ID	32 bit number used to uniquely identify a device type in a specific OS, e.g. 0008 0101
OS version	Number used to uniquely identify the OS delivered, e.g. 1.00
Description	Device description e.g. Premium TSX P57 304 OS V1.0

The **Close** button allows you to return to the **Uni-Telway Target** screen.

Navigation buttons

The navigation buttons, situated at the bottom of the screen, allow you:

- to return to the previous step (**Back**),
- to proceed to the next step (**Next**),
- to close the software (**Close**),
- to access the on-line help (**Help**).

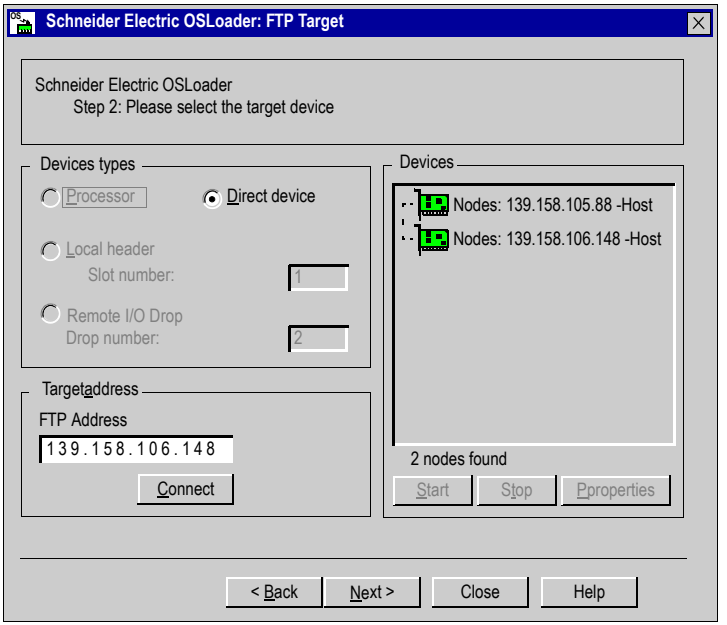
Description of the target device selection screen: FTP communication type

General

The **FTP Target** dialog box is displayed if the driver selected in the previous step is an FTP driver.

Illustration

The main elements of the target device selection screen are described in the following paragraphs.



Device type

The device types supported by OSLoader (See *Device types, p. 13*) and available for the Ethernet/FTP communication type are displayed in the **Device Type** field. For FTP only a **direct device** can be targeted.

Target address

The **Target Address** field consists of two zones.

The following table describes the functionalities of each of these areas.

Fields	Description
FTP Address	In this field, you must enter the address of the target device specific to the FTP communication type. To be valid, the address to be entered in the **FTP Address** field is made up of 4 numbers between 0 and 255 (TCP/IP address).
Connect	By pressing the **Connect** button, the OSLoader software connects to the target device whose address is specified in the **FTP Address** entry field. For some devices, a **MAC** address can be requested before the connection. Generally this can be found on the device or can be read, for example, from the HE-Quantum display. If the connection is established, the target device is added to the directory tree in the **Devices** field. If the connection cannot be established, an error message explaining the reason for the failure is shown on screen.

Devices: directory tree

The directory tree in the **Devices** field displays the list of connected devices. On opening the OSLoader, when no connection is enabled, the directory tree is empty.

The following table shows the list of icons used in the directory tree together with the corresponding description.

Icon	Description
	Processor in stop mode (**Stop**).
	Processor in run mode (**Run**).
	Processor is not configured. No application was ever loaded into the PLC.
	Host adapter (SA85 or PCMCIA Modbus Plus card).
	Bridge or Bridge plus or Bridge mux.
	Input/output port.
	Remote input/output module.
??	Device unknown.

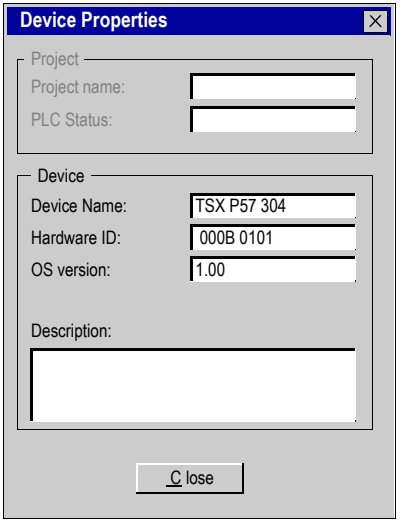
By clicking on a specific device, the **FTP-Address** entry field of the **Target Address** field is automatically updated.

By double-clicking on a specific device, you proceed to the **Device properties** dialog box (equivalent to the **Properties** properties button).

Device Properties

The **Device Properties** dialog box, which is accessible by pressing the **Properties** button in the **Devices** field, gives access to information concerning the device selected.

Display of the **Device Properties** dialog box:



Elements of the **device properties dialog box**:

Element	Description
Project name	Name of the project loaded into the controller
PLC status	Status of the corresponding PLC (OPERATIONAL, STOPPED, INIT, NOT CONFIGURED, WAITING, PAUSED, ERROR)
Equipment Name	Device product name, e.g. TX P 57 304
Hardware ID	32 bit number used to uniquely identify a device type in a specific OS, e.g. 0008 0101
OS version	Number used to uniquely identify the OS delivered, e.g. 1.00
Description	Device description e.g. Premium TSX P57 304 OS V1.0

The **Close** button allows you to return to the **FTP Target** screen.

Navigation buttons

The navigation buttons, situated at the bottom of the screen, allow you:

- to return to the previous step (**Back**),
- to proceed to the next step (**Next**),
- to close the software (**Close**),
- to access the on-line help (**Help**).

How to choose the target device

Procedure

The following table describes the procedure for choosing the target device.

Step	Action
1	In the **Device Type** field, check the box corresponding to the type of target device you want.
2	If, in the **Device Type** field, you have chosen the **Local Head** device, type the number indicating the position of the target module in the rack in the **Slot Number** entry field. If, in the **Device type** entry zone, you have chosen the **Remote I/O Drop** device, type: ● in the **Slot Number** entry field, the number indicating the position of the input/output module, ● in the **Drop number** entry field, the number indicating the position of the remote target module address.
3	In the **Target Address** field, enter the address of the target device. The addressing mode is specific to the communication type chosen.
4	Press the **Connect** button in the **Target Address** field to enable the OSLoader to connect to the target device. If the connection is established, the target device is added to the directory tree in the **Devices** field. If the connection cannot be established, an error message explaining the reason for the failure is shown on screen.
5	To add other devices to the directory tree of the **Devices** field, repeat the procedure or request a sniffing operation using the **Scan** command.
6	Confirm your choice by pressing the **Next** navigation button or by double-clicking in the directory tree of targets compatible with the type chosen. **Result**: The **Operation** dialog box appears on screen (See *Description of the command selection screen, p. 50*).

4.4 Available operations

At a Glance

Aim of this sub-section

This sub-section describes the available operations specific to the OSLoader software.

What's in this Section?

This section contains the following topics:

Topic	Page
Description of the command selection screen	50
How to choose the command	52
Description of the screen for the operating system comparison	53

Description of the command selection screen

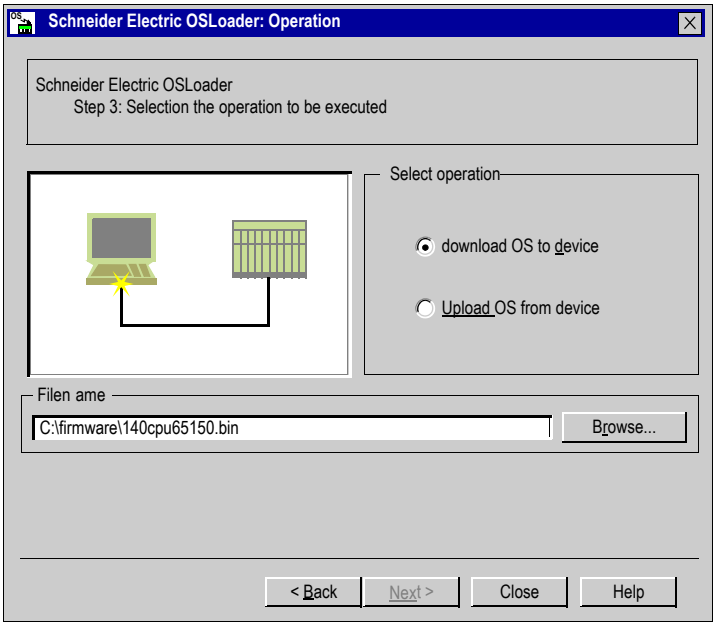
General

The OSLoader can execute two different commands:

- download a new operating system to the selected device,
- Download the operating system of the selected device to a file **(not available for the processors of the Premium range)**.

Illustration

The main elements of the command selection screen are described in the following paragraphs.



Select an operation

The following table shows the three available commands.

Command	Description
Download OS to device	The new operating system replaces the existing operating system in the selected device (See *How to choose the command, p. 52*). All information saved earlier will be lost. After downloading, you must reconfigure the processor.
Upload OS from device	The existing OS in the selected device is read by the OSLoader and the data are stored in a file (See *How to choose the command, p. 52*). **Note**: This type of procedure is recommended as a back-up operation, particularly before downloading a new OS to the selected device.

File name

Use the **Browse button.** you can use the **Filename field to select** the following:

- the name of the file to be downloaded (intermediate or OS replacement file), see readme.txt file on the OS CD-ROM for the file descriptions,
- or the backup path of the OS image file.

Intermediate operating system

Older operating systems cannot be directly updated. Before you can transfer the final operating system, you must first prepare the device by loading an intermediate operating system.

In this case, the OSLoader will recognize that a direct update is not possible and display the following message:

- Load the intermediate operating system.
- Restart your PLC with the Reset button (Premium/ PL7) or execute a cold start (Quantum/Concept).
- Load the final operating system.

Follow the instructions.

Note: When the intermediate operating system is loaded a warning will be displayed after the operating system comparison that the version of the intermediate operating system cannot be read. This warning must be confirmed with **OK**.

Navigation buttons

The navigation buttons, situated at the bottom of the screen, allow you:

- to return to the previous step (**Back**),
- to proceed to the next step (**Next**),
- to close the software (**Close**),
- to access the on-line help (**Help**).

How to choose the command

Procedure

The following table describes the procedure for choosing one of the three commands of the OSLoader software.

Step	Action
1	In the **Select Operation** field, check the box that corresponds to your choice.
2	In the **Filename** field, choose, using the **Browse ... button** the storage location: ● which contains the file to be downloaded to replace the OS of the selected device (chosen command: **OS for device downloading** ● where you wish to save the file containing the OS to be retrieved (chosen command: **Upload OS from device**.
3	Confirm your choice by pressing the navigation button **Next**. **Result**: The **File and Device Info** window is displayed on the screen (See *Description of the screen for the operating system comparison, p. 53*).

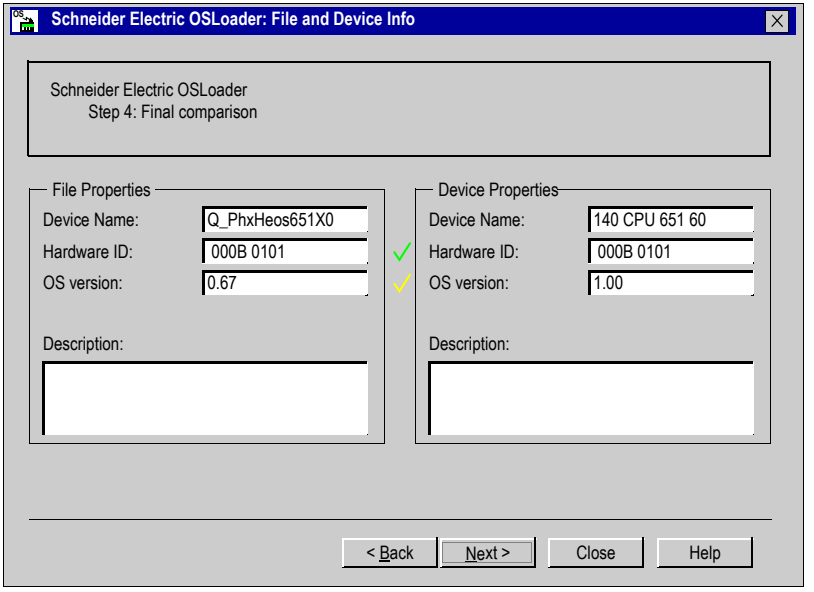
Description of the screen for the operating system comparison

General

The **File and Device Info** dialog box provides a comparison between the properties of the file to be transferred to the selected device (**File Properties**) and the properties of the OS existing in the target module (**Device Properties**).

Illustration

The main elements of the comparison screen are described in the following paragraphs.



Comparison

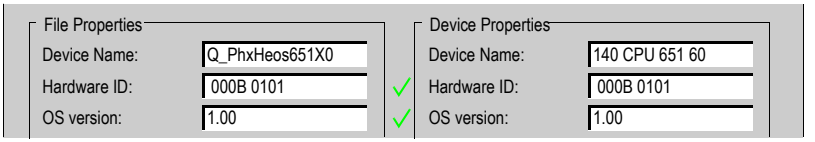
The **Comparison of File Properties and Device Properties** field is divided into two main parts:

- the properties of the OS file to be downloaded,
- the properties of the OS existing in the target device.

Different colored markers make it easier to compare these properties.

Green marker

Representation of the green marker:

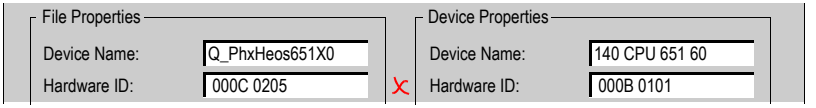


Meaning of the green marker:

Property	To be transferred		Existing
Hardware ID	Operating system file	=	Operating System
OS version	Operating system file	≥	Operating System

Red marker

Representation of the red marker:



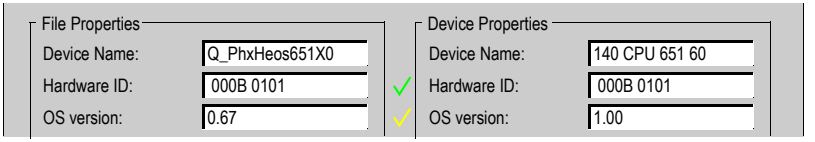
Meaning of the red marker:

Property	To be transferred		Existing
Hardware ID	Operating system file	≠	Operating System

Note: In the event of incompatibility between the hardware identification codes, you will not be able to proceed to the next step. The navigation button **Next** is disabled.

Yellow marker

Representation of the yellow marker:



Meaning of the yellow marker:

Property	To be transferred		Existing
Hardware ID	Operating system file	=	Operating System
OS version	Operating system file:	<	Operating System
or			
OS version	One of the version numbers cannot be determined.		

CAUTION

PERSONAL INJURY OR MATERIAL DAMAGE

Make sure that transferring of the operation system and following unforeseeable behavior of the system does not cause personal injury or machine damage.
If an OS version number cannot be determined, a transfer can take place but the user takes responsibility for any risks involved.

Failure to follow this instruction can result in injury or equipment damage.

Navigation buttons

The navigation buttons, situated at the bottom of the screen, allow you:

- to return to the previous step (**Back**),
- to proceed to the next step (**Next**),
- to close the software (**Close**),
- to access the on-line help (**Help**).

4.5 Transfer of the OS

At a Glance

Aim of this sub-section

This sub-section describes the transfer of the OS to the target devices.

What's in this Section?

This section contains the following topics:

Topic	Page
Summary screen	57
Transfer of the OS	58
Ending the procedure	61

Summary screen

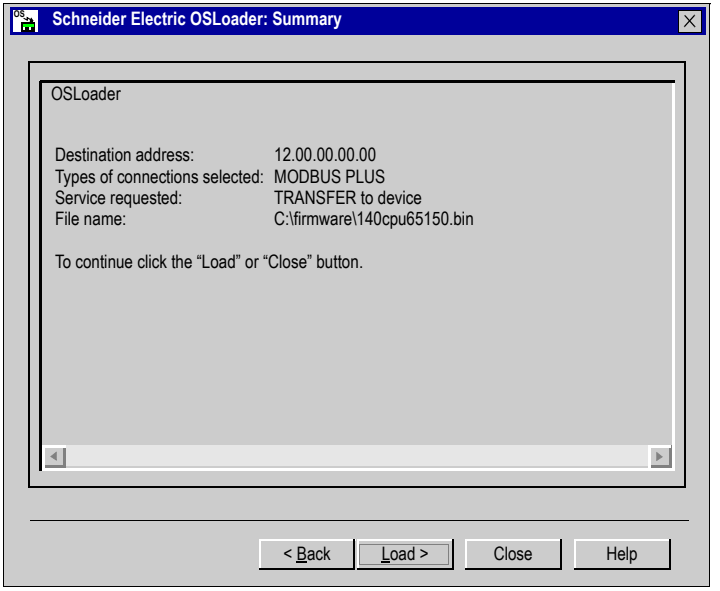
General

In the **File and Device info screen** (See *Description of the screen for the operating system comparison, p. 53*) you can use the **Next** button in the summary **dialog box**.

This dialog box contains a summary of the main information concerning the chosen procedure and gives access to the data transfer phase.

Procedure

The following table describes the procedure to access the data transfer phase.

Step	Action
1	After checking the information contained in the **Summary** dialog box, start the transfer by pressing the **Load** navigation button.  **Result**: The **Progress** screen appears to allow you to follow the data transfer phase (See *Transfer of the OS, p. 58*).

Transfer of the OS

General

The **Progress** dialog box informs you of:

- the progress of the transfer of the OS,
- the number of bytes downloaded,
- the time remaining,
- the transfer rate in bytes/second.

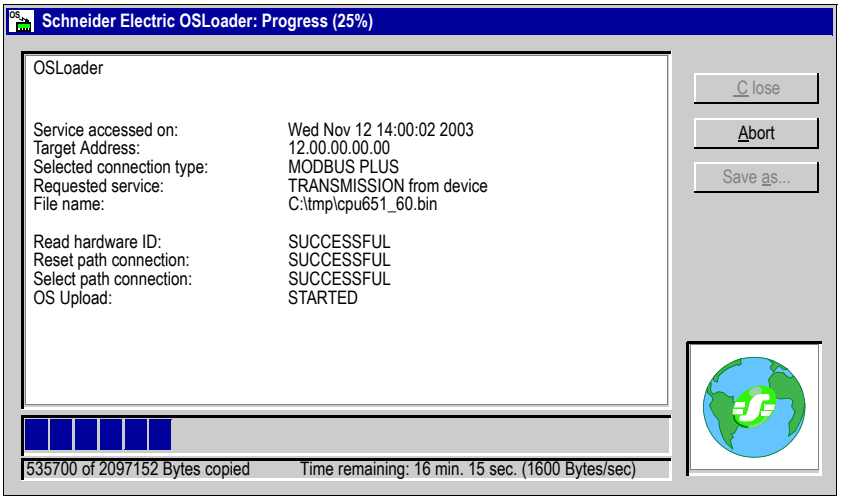
Note: If the target device is in RUN mode when downloading the new operating system a dialog box asking you for authorization to stop the PLC appears on screen.

Intermediate operating system

Note: Older operating systems cannot be directly updated. Before you can transfer the final operating system, you must first prepare the device by loading an intermediate operating system. (Also see *Intermediate operating system, p. 51*).

Illustration

The main elements of the data transfer progress screen are described in the following paragraphs.



	WARNING
	DESTRUCTION OF THE DEVICE Never interrupt the power supply to the CPU during the transmission. An interruption of the power supply to the CPU during the transmission can lead to the device becoming damaged irreparably. **Failure to follow this instruction can result in death, serious injury, or equipment damage.**

Information

The **Progress** screen provides you with the main information concerning the download procedure (**UPLOADING to the device**, **DOWNLOADING from the device**).

Progress bar

The state of progress of the data transfer is displayed at the bottom of the **Progress** screen.

Additional information (number of bytes downloaded, transfer rate, etc.) is also visible beneath the transfer progress bar.

Abort and Close buttons

You can interrupt the transfer procedure by clicking on **Abort**.

	WARNING **UNFORSEEABLE BEHAVIOR OF THE SYSTEM.** Make sure that aborting the transmission of the operating system does not lead to unforeseeable behavior of the system. In the event of an abort procedure, the PLC no longer has an OS. The processor is down. **Failure to follow this instruction can result in death, serious injury, or equipment damage.**

The **Close** button, which is enabled at the end of the data transfer process, allows you to leave the OSLoader software (See *Ending the procedure, p. 61*).

"Save as" buttons

After a **Upload from device** operation, the OSLoader saves the file containing the OS to the disk and by clicking on the **Save as**.

Ending the procedure

Procedure

The following table describes the procedure for ending the data transfer procedure for OSLoader software.

Step	Action
1	Check that the data transfer is working correctly by means of the download progress bar situated at the bottom of the **Progress** screen. **Note**: during transfer, you can stop the procedure at any time by pressing the **Abort** button. This automatically brings you back to the previous step (See *Summary screen, p. 57*). To restart the procedure, press the **Loading** button on the **Summary** screen. **In the event of an abort procedure, the PLC no longer has an OS. The processor is down.**
2	After a **Upload from device** operation, the OSLoader saves the file containing the operating system to the disk and by clicking on the**Save as**.
3	Once data transfer is complete, press the **Close** button to close the OSLoader software.

Communication errors and limits during downloading

5

At a Glance

Aim of this section

This section describes the main communication errors and operating limits that may arise when downloading data.

What's in this Chapter?

This chapter contains the following topics:

Topic	Page
Communication Faults	64
Operating limits	65

Communication Faults

At a Glance

During the transfer certain errors may arise which are caused by the OSLoader software. These may adversely influence the transfer. The following section provides information of how to deal with the most common problems.

Error type

Certain events cause communication errors. These errors are of the following type:

- **Minor errors** (example: Disconnection of PG connection)
- **serious errors** (example: network down)

Minor error

For minor errors a dialog box will appear which gives the user the option of restarting or canceling the transfer.

When you have fixed the cause of the error, select either **Repeat** if you want to restart the transfer or the command **Cancel loading** if you want to cancel the operation.

Serious error

The PLC becomes unusable if a serious error arises. The **RUN**, **ERR** and **I/O** LEDs light up, and communication between PG and the controller is no longer possible.

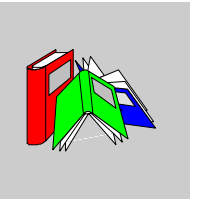
Operating limits

Limits

The following table describes the main cases in which an operating system cannot be downloaded.

Limits	Comment
The PLC is down or is not responding.	It is impossible to establish the connection. Check that: • the PLC has not suffered a power outage, • the PLC is still connected to the terminal, • no other tool is connected to the terminal port.
The PLC is already reserved by another tool.	Downloading is impossible. Disconnect the entity that has reserved the PLC. Restart the program.
The format of the selected file is not compatible with OSLoader.	Use a file with an appropriate format type.
The binary file to be loaded is incompatible with the target processor.	Downloading is impossible. Check the type of PLC, then select the appropriate binary file.

Glossary



!

Unity Pro Programming software of Schneider Electric PLCs.

C

CPU Central processing unit : generic name given to Schneider Electric processors.

E

Ethernet Local area network.

I

I/O Inputs/Outputs.

M

Modbus Master/slave protocol.

O

Operating mode These are all the rules governing the behavior of the module during the transitional phases or on the appearance of a fault.

OS Operating System

OSLoader Software for downloading the operating system of Schneider Electric PLCs.

S

SMART OS Generic name given to the operating system of PL7 processors.

T

TCP / IP Transmission Control Protocol / Internet Protocol.

U

Uni-TE	Telemecanique protocol.
UNITY OS	Generic name given to the operating system of Unity Pro processors.
Unity Studio Manager	Tool to support the development of remote automation solutions
USB	Universal Serial Bus.

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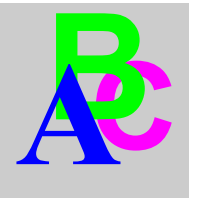

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